

Applicants : Mitchell et al.  
Serial No. : 10/501,759  
Filed : January 10, 2005  
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Attorney's Docket No.: 17638-  
003US1 / INTU/P27686US

AMENDMENTS TO THE DRAWINGS:

Please replace the drawings with the new set of drawings submitted herewith. No new matter is believed to have been entered.

### REMARKS

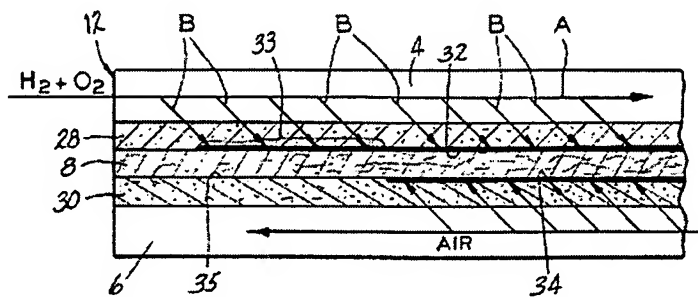
Claims 1, 5, 7, 10 to 20, 22 to 32, 37, 39 and 40 are pending, of which claims 1, 26, 30, and 37 are independent.<sup>1</sup> Favorable reconsideration and further examination are respectfully requested.

Initially, we thank the Examiner for the indication that claims 9 and 27 recite allowable subject matter.

Next, the drawings and claims have been amended to address the objections and rejections found on pages 2 and 3 of the Office Action.

Turning to the art rejections, the independent claims, namely claims 1, 26, 30, 37 and 41, were rejected over newly-cited U.S. Patent No. 4,775,439 (Trocciola). The remaining claims were rejected over Trocciola alone or in combination with newly-cited JP5-89899. As shown above, the claims have been amended.

Fig. 2 of Trocciola (below) shows a fuel cell.



***FIG-2***

As shown in Fig. 2, the fuel cell includes a catalyst strip 33. As explained in Trocciola:

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<sup>1</sup> The Examiner is urged to independently confirm this recitation of the pending claims.

Since the strip 33 has only one catalyst layer adjacent the matrix 8, there will not be any electrochemical reaction between hydrogen from the anode side 4 and the oxygen from the cathode side 6 in the matrix 8 adjacent to the strip 33. The oxygen-contaminated hydrogen fuel gas flows into the system in the direction of the arrow A, shown in FIG. 2 from the inlet side 12 of the anode gas space 4. The fuel gas thus must flow over the extended catalyst strip 33 before it reaches the electrochemically active area of the cell between the catalyst layers 32 and 34. As soon as the fuel gas enters the anode gas space 4, the hydrogen and oxygen molecules begin to diffuse through the porous anode substrate 28 toward the matrix 8, as indicated by the arrows B. The oxygen and hydrogen that diffuse through the substrate 28 to the catalyst strip 33 will combine exothermically to form water at the catalyst strip 33. This reaction at the strip 33 will lower the amount of oxygen in the fuel gas before the latter reaches the electrochemically active area of the cell, i.e., that portion of the matrix 8 which lies between the catalyst layers 32 and 34.<sup>2</sup> (emphasis added)

Thus, mixing takes place inside of the fuel cell, as is evident from the excerpt above, particularly the underlined portions. By contrast, independent claim 1 recites

a recirculation conduit extending between the fuel delivery outlet and the mixing point, wherein the mixing point is external to the fuel cell and comprises either (i) a reaction chamber for reacting fuel, or (ii) a pre-mixing chamber, the mixing point for mixing fuel from the fluid flow regulator with oxidant species from the recirculation conduit.

Independent claim 26 recites

wherein the mixing point is external to the fuel cell and comprises either (i) a reaction chamber for reacting fuel, or (ii) a pre-mixing chamber, the mixing point for mixing fuel from the fluid flow regulator with oxidant species from the recirculation conduit.

Independent claim 30 recites

wherein the reaction chamber is external to the fuel cell and is adapted so that at least a part of the fuel supply delivered to the reaction chamber is reacted with the oxidant supplied to the reaction chamber to precondition the fuel being delivered to the anode.

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<sup>2</sup> Col. 4, lines 9 to 30

Independent claim 37 recites

effecting a controlled combustion of fuel and oxidant species at the mixing point and external to the fuel cell.

Thus, each of the independent claims requires the mixing point, reaction chamber, or controlled combustion to be external to the fuel cell. This is not the case in Trocciola, where pre-mixing occurs at catalyst strip 33 prior to layer 34, and reaction occurs in the area of layers 32, 34. For at least this reason, the independent claims are believed to be patentable over the art.

Dependent claims are also believed to define patentable features. Each dependent claim partakes of the novelty of its corresponding independent claim and, as such, each has not been discussed specifically herein.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

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In view of the foregoing amendments and remarks, we respectfully submit that the application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

The undersigned attorney can be reached at the address shown below. All telephone calls should be directed to the undersigned at 617-521-7896.

Please apply any deficiency in fees or credits due in this case to Deposit Account 06-1050 referencing Attorney Docket No. 17638-003US1.

Respectfully submitted,

Date: Tuesday, February 17, 2009  
(the day following Presidents' Day)

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